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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/775,033
Filing Date: February 09, 2004
Appellant(s): WATTS ET AL.

Kerrie A. Laba
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 6, 2006 appealing from the Office action mailed April 13, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellants' statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct, as far as it goes. The Examiner would elaborate as follows. Both the primary seal 20/24 and the secondary seal 26/28 are radially extending face seals, and neither of them form a shaft seal which extends along the shaft. The primary seal is effective because the collar 18, on which sealing face 20 is formed, is integral with the shaft, so any gas in the interior of the valve would have to pass by the face seal 20/24 before it could travel along the

shaft to the exterior of the valve. Washer 30, on which sealing face 28 is formed, is not integral with the shaft or connected to it at all. Rather, a gap R exists between washer 30 and shaft 16, see Figure 8 and page 8, first full paragraph of the specification.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellants' statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

3,693,935	Thauer	9-1972
5,630,571	Kipp et al	5-1997
5,631,761	Lee	5-1997
6,935,618	Welty et al	8-2005
1,991,173	Rautenstrauch	2-1935

Appellants' admission that Figures 4-5 are not patentably distinct from Figure 3, found in the first paragraph of the election of December 6, 2005.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 2-5, 11, 13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Thauer.

Thauer teaches a bearing sleeve 3, conical sealing face 9 on the valve shaft, conical face 10 on the bearing, disc or washer 13, spring 11 and nut 5'. The upper face of

washer 13 and the lower face of bearing 3, as oriented in the drawings, are read as sealing faces since they are flat, abutting surfaces.

Thauer includes a spring acting to press flat washer 13 against the flat lower face of bearing 3 with enough force to ensure that bearing surfaces 9 and 10 form a seal. It is within the range of typical industrial practice of finishes and materials that it would be inherent to this structure that a seal of some degree is formed between the washer and bearing. For example, a sufficient seal to reduce the flow of atmospheric air radially between the abutting faces of washer 13 and bearing 3, as from the shaft radially outward to the outer edge of washer 13.

Claims 6 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thauer in view of Kipp et al.

Thauer teaches the claimed valve except uses a coil spring and a threaded in bearing sleeve. Kipp et al show a similar valve with a wave spring 64 and a bushing or bearing 78 that is press fit into the body. It would have been obvious for one of ordinary skill in the art at the time the invention was made to have used a wave spring instead of a coil spring in Thauer in view of the well known equivalence of the two springs, and to press fit the bearing sleeve instead of thread it in to secure the sleeve better.

Claims 7-10, 12, 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thauer.

The use of the recited materials to make the valve of Thauer is considered to be an obvious matter of engineering design in view of the well known nature of such materials and their industrial use. As to claim 12, the modification of Thauer to be an

eccentric flap seating on two seats is obvious in view of applicant's admission that Figures 4-5 are not patentably distinct from Figure 3.

Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thauer in view of Lee and Welty et al.

Thauer shows the claimed invention except for the coatings. Lee teaches a bearing with antifriction coatings comprising diamond like carbon film, or DLC, to reduce friction between the mating surfaces of the bearing. Welty et al teach a valve with a DLC coating to reduce friction between sliding surfaces and includes two coatings 21, 23 of titanium nitride, for example, to support the DLC, which coatings are read as being ceramic materials. It would have been obvious for one of ordinary skill in the art at the time the invention was made to have used such plural coatings and DLC in the valve of Thauer to reduce friction between the bearing surfaces, in view of the teaching reference of Lee which shows the desirability of such coatings on bearing surfaces.

Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thauer in view of Rautenstauch.

Thauer shows the claimed valve except for the details of these claims. Rautenstauch shows a bearing and packing for a rotary valve with conical face 19 on stem or spindle 16, packing 35 and a gland 36 having a running fit with the stem 16 and a conical profile sealing with the packing 35. The packing 35 inherently comprises a bearing sleeve in that it serves a bearing function. The bolted down gland 36 is analogous to the spring and washer of Thauer in that they are both well known methods of applying compressive force to the shaft seals. It would have been obvious at the time

the invention was made for one of ordinary skill in the art to have used a packing and bearing configuration as taught by Rautenstauch in the valve of Thauer to improve the seal thereof. The use of the spring biasing of Thauer to maintain a compressive force instead of the bolts of Rautenstauch is considered obvious in view of the well known equivalence of the two systems.

(10) Response to Argument

In response to applicant's argument that Thauer fails to show certain features of appellants' invention, it is noted that the feature upon which appellants rely (i.e., the washer forming a shaft seal) is not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Instead, the claim only recites that "the washer has a secondary sealing surface that cooperates with the secondary bearing surface". Thauer clearly shows a washer with a secondary surface that cooperates with a secondary bearing surface, the only question is whether that washer surface can fairly be termed a sealing surface. It is the Examiner's opinion that the washer will inherently reduce air flow across the secondary bearing surface, as compared to if the washer was not present, in that the spring 11 presses them together into tight contact. Such an abutting structure is the same as the flat, abutting contact between the flange 4 of the bearing and the surface of the body surrounding opening 1, which is disclosed as a seal, see column 1, lines 48-55 and column 2, lines 8-12 of Thauer.

The term "seal" is broadly used in the art to mean a substantial reduction in flow, even if not a complete elimination of flow.

Further, the space between the washer and the bearing of Thauer will be considerably less than the gap R between the washer and the shaft in this application. If the application defines a "seal" as including a gap that will allow gas flow therethrough then it is reasonable to read the contact surface of the Thauer washer as inherently comprising a sealing surface.

As to Thauer in view of Kipp, appellants argue that the coil spring of Thauer is longer than the spring washer of Kipp so it "cannot be simply interchanged" and that there is no motivation or suggestion to modify Thauer.

As to the first, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

As to the second, the Supreme Court in *KSR v. Teleflex* (citation omitted) held that the TSM test is not a litmus test for obviousness. Appellants' argument in this issue is a perfect illustration of why the court's reasoning was sound.

Both types of springs have been known for centuries and probably billions have been produced. Understanding the function and effect of a spring requires the barest minimum of mechanical aptitude. Calculating spring force is junior high school level

work. The mere absence of a teaching or suggestion in the references that the other type of spring could be used is not remotely dispositive of the issue.

In KSR, the Supreme Court also set forth rationales for arriving at a conclusion of obviousness. One rationale is the simple substitution of one known element for another to obtain predictable results. The rejection at issue falls squarely under this rationale as it involves the substitution of a wave spring for a coil spring to obtain the predictable result of performing the same biasing function in the same valve combination.

Appellants further argue against the bearing of Kipp for "no motivation or suggestion to modify" Thauer. The precepts set forth in KSR apply equally here. Even if the valve of Thauer could be preassembled and the bearing simply screwed in (which in fact is impossible because the valve plate 7 is larger than the hole 1), KSR stands for the proposition that a routineer in the art would exercise ordinary creativity, common sense and logic. It takes only a modicum of mechanical aptitude or experience to know that press fitting a member in a bore is a more secure attachment than threading it into the bore. KSR also sets out the rationale of applying a known technique to improve similar devices in the same way. The proposed rejection is nothing more than applying the known technique of press fitting a bearing in a flap valve to improve the similar flap valve of Thauer in the same way.

As to claims 7-8, Appellants argue that the spring is made of Inconel to provide certain benefits, and point to page 4, line 29-page 5, line 7. Upon reviewing the cited disclosure, it appears that the characteristics of Inconel which Appellants find beneficial were well known characteristics of Inconel at the time the invention was made. Using a

known material to obtain the benefits expected from its use is certainly within the ambit of §103, under the guidance offered by KSR that a routineer in the art would employ common sense and logic.

As to claim 10, the Examiner has assumed that the recited steel is a commercially available steel from Germany, was Prior Art to the application, and that the characteristics of the steel were known at the time the invention was made. Appellants have filed no information under Rule 1.56, at least in a form understandable to the Examiner, regarding this steel nor have they refuted the Examiner's assumptions. Accordingly, the rejection is reasonable and should stand, again under the guidance offered by KSR that a routineer in the art would employ common sense and logic.

As to claim 17, the use of steel for components such as bearings is notoriously old and well known that official notice may be taken of it. Again, KSR says that one should use some common sense.

As to claim 18, the Examiner's position is the same as set forth regarding claim 10 above.

As to claims 19-22, Appellants argue that the claim or the rejection requires adding a coating to washer 13 of Thauer. That is inaccurate. Claim 19 recites "further comprising a ceramic coating on at least a portion of at least one of the valve spindle and the washer". The references teach adding ceramic coatings to bearing surfaces. The proposed rejection contemplates adding a coating to the bearing surfaces 9/10 of Thauer. Such combination would result in a ceramic coating on the spindle and clearly meets claims 19-22

Appellants argue that the environment of use of the Lee bearing is so different from the environment of use of the Thauer bearing that it would preclude a routineer in the art from considering the similarities of the two bearings. The Examiner disagrees. Bearings function in a similar manner in all environments of use and there is sufficient nexus between the two patents to suggest the combination, without hindsight to the instant application. The materials recited are found in the references performing their expected functions and the proposed combination would produce exactly the same result as the claimed device.

As to claims 23-25, to the extent that the functional recitation “to prevent gas from flowing between the washer and the valve spindle" is supported in the application, it is because it is inherent to the disclosed running clearance R. Since Rautenstauch teach a running clearance in the analogous gland 36 the recited function will inherently be present in the proposed combination.

Appellants argue that the gland 36 of Rautenstauch is not a spring and a washer, and they are correct. The Examiner’s stated position is that gland 36 is analogous to a spring and washer, which is correct. Appellants argue that Rautenstauch does not teach conical sealing and bearing surfaces, which is clearly incorrect, see the drawing Figure. Appellants again argue that there is no motivation or suggestion to combine the references. The precepts of KSR apply equally here, and the teaching of conical sealing and bearing surfaces in Rautenstauch are applicable to the valve of Thauer because it involves the simple substitution of one known configuration for another known

configuration to obtain the predictable result of sealing a valve shaft while providing a thrust bearing for the shaft.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/John Fox/

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TC 3700 TQAS